CLAIMS

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1. An electro-optic device comprising a substrate and an integrated optical waveguide extending across the substrate, two doped regions being provided such that an electrical signal can be applied across the doped regions to alter the density of charge carriers within the waveguide, the doped regions each comprising a plurality of doped areas spaced apart from each other along the length of the waveguide.

2. An electro-optic device as claimed in claim 1 in which the spacing between adjacent doped areas is in the range of 250 to 300 microns.

3. An electro-optic device as claimed in claim 1 or 2 in which each of the doped areas has a length in a direction along the waveguide of at least 1 mm.

4. An electro-optic device as claimed in claim 1, 2 or 3 in which each of the doped areas has a length in a direction along the waveguide of 10 mm or less.

5. An electro-optic device as claimed in any preceding claim in which the doped regions each comprise at least four doped areas spaced part from each other in a direction along the length of the waveguide.

6. An electro-optic device as claimed in any preceding claim in which the doped areas form p-i-n diodes across the waveguide.

7. An electro-optic device as claimed in claim 6 in which the doped areas are arranged in an alternating sequence of p-doped areas and n-doped areas along the length of the waveguide.

8. An electro-optic device a claimed in any preceeding claim in which the waveguide is formed of silicon.

9. An electro-optic device as claimed in claim 8 in which the waveguide is a silicon rib waveguide.

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10. An electro-optic device as claimed in any preceding claim in which the two doped regions are provided on opposite sides of the waveguide.

11. An electro-optic device as claimed in claim 9 and 10 in which the doped regions are provided in areas of silicon adjacent the rib waveguide.

12. An electro-optic device as claimed in any preceding claim in which the waveguide has a substantially straight portion and the doped regions are arranged so that the density of charge carriers can be altered within said substantially straight portion of the waveguide.

13. An electro-optic device as claimed in any preceding claim in which the doped areas are electrically connected so the plurality of diodes formed thereby are connected in series.

14. An electro-optic device as claimed in any preceding claim in which electrical connections to and/or between the doped areas are provided by metallisations.

15. An electro-optic device as claimed in any preceding claim forming an adjustable attenuator.

16. An electro-optic device as claimed in any preceding claim forming a phase modulator.

17. An electro-optic device comprising a substrate and an integrated optical waveguide extending across the substrate, at least one portion of the waveguide being curved, two doped regions being provided such that an electrical signal can be applied across the doped regions to alter the density of charge carriers within the curved portion of the waveguide.

18. An electro-optic device as claimed in claim 17 in which the doped regions each comprise a plurality of doped areas spaced apart from each other along the length of the waveguide.

19. An electro-optic device as claimed in claim 17 or 18 in which an n-doped region is provided adjacent an outer side of the curved portion of the waveguide and a p-doped region adjacent an inner side of the curved portion.

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20. An electro-optic device as claimed in claim 19 in which the waveguide comprises a series of two or more curved portions curving in alternating directions, each having an n-doped region adjacent the outer side of the curved portion and a p-doped region on the inner side thereof so as to form a series of diodes of alternating polarity along the length of the waveguide.

21. An electro-optic device substantially as hereinbefore described, with reference to the accompanying drawings.